POPULATIONS AT RISK

Receipt of Preventive Services Among Privately Insured Minorities in Managed Care versus Fee-for-service Insurance Plans

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OBJECTIVE: **We compare preventive services utilization among privately insured African Americans and Hispanics in managed care organizations (MCOs) versus fee-for-service (FFS) plans. We also examine racial/ethnic disparities in the receipt of preventive services among enrollees in FFS or MCO plans.**

DESIGN: **Analysis of the nationally representative 1996 Medical Expenditure Panel Survey.**

PARTICIPANTS: **Participants included 1,120 Hispanic, 929 African-American, and 6,383 non-Hispanic white (NHW) adults age 18 to 64 years with private health insurance.**

MEASUREMENTS AND MAIN RESULTS: **We examined self-reported receipt of physical examination, blood pressure measurement, cholesterol assessment, Papanicolau testing, screening mammography, and breast and prostate examinations. Multivariate modeling was used to adjust for age, gender, education, household income, and health status. Hispanics in MCOs were more likely than their FFS counterparts to report having preventive services, with adjusted differences ranging from 5 to 19 percentage points ($P < .05$ for physical examination, blood pressure measurement, breast examination and Pap smear). Among African Americans, such patterns were of a smaller magnitude. In both MCOs and FFS plans the proportion of African Americans reporting preventive services was equal to or greater than NHWs. In contrast, among Hispanic women in FFS, a non–statistically significant trend of fewer cancer screening tests than NHW's was observed (Pap smears 75% vs 80%; mammograms 66% vs 74%, respectively). In both MCO and FFS plans, Hispanics were less likely than NHWs to report having blood pressure and cholesterol measurement ($P < .05$).**

CONCLUSIONS: **With the demise of traditional MCOs, reform efforts should incorporate those aspects of MCOs that were associated with greater preventive service utilization, particularly among Hispanics. Existing ethnic disparities warrant further attention.**

KEY WORDS: **Hispanics; African Americans; managed care; preventive services; health insurance.**
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The number of privately insured Americans enrolled in managed care organizations (MCOs) grew significantly over the past decade.[1] In addition, as compared to non-Hispanic whites (NHWs), racial and ethnic minorities with private insurance are more likely to belong to such MCOs.[2] At present, one of the most common measures of quality in outpatient medicine is the delivery of preventive health services.[3] Yet few studies have specifically examined delivery of preventive services to privately insured minority populations in MCOs versus those in traditional fee-for-service (FFS) insurance plans. Furthermore, although the elimination of racial and ethnic disparities in health has become a major policy goal,[4,5] little is known about disparities in preventive service utilization in private sector MCOs.

Previous studies have shown that disparities in the delivery of preventive health services are mainly due to a lack of insurance.[6] Yet even among insured populations, members of racial/ethnic minorities are less likely to receive preventive services.[7] Although many MCOs place an emphasis on the delivery of such services, concerns have been raised that MCOs could actually worsen racial/ethnic disparities.[8,9]

In the public sector, one study of Medicare enrollees found that MCOs improved influenza vaccinations for whites and African Americans as compared to FFS, but did not lessen racial disparities.[10] Another study analyzing data from the 1996 Medicare Current Beneficiary Survey found that as compared to traditional Medicare FFS, membership in Medicare MCOs was associated with higher rates of Pap smear and mammogram screening for NHWs but not for African Americans or Hispanics.[11] In contrast, one study in the private sector, analyzing data

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from one large HMO in Northern California, found no significant differences in self-reported receipt of preventive services between Hispanics or African Americans as compared to NHWs.[12] That study did not compare the HMO group to FFS enrollees, and few studies have examined this issue in a nationally representative sample.[13]

The primary objective of this study was to compare self-reported receipt of preventive services among privately insured racial/ethnic minorities enrolled in MCO versus FFS plans by analyzing data from the 1996 Medical Expenditure Panel Survey (MEPS). Secondly, we examined disparities in the receipt of preventive services by comparing preventive service utilization among African Americans and Hispanics enrolled in FFS or MCO plans to their NHW counterparts.

METHODS

Data Source

We obtained data from the first 3 rounds of the MEPS Household Component (HC), a longitudinal survey of 10,500 households co-sponsored by the Agency for Health Care Research and Quality (AHRQ) and the National Center of Health Statistics. The survey is conducted using face-to-face and telephone interviews in English or Spanish and is designed to provide nationally representative estimates of health care utilization, expenditures, sources of payment, and insurance coverage for the U.S. civilian noninstitutionalized population.[14] The overall response rate for the first 3 rounds of the MEPS was 70%.[15]

During the first round, conducted from March to July of 1996, data were collected on demographic characteristics, health insurance status, self-perceived health status, and level of education. In the second round, conducted from August to November of 1996, information on access to care and usual source of care was obtained. Round 3, conducted from February to May of 1997, collected data concerning utilization of health services and receipt of preventive or screening examinations.[15]

Study Population

We analyzed data on the 1,120 Hispanics, 929 African Americans, and 6,383 NHWs age 18 to 64 years who reported having private insurance coverage. We limit our analyses to adults age 18 to 64 years, the age groups for whom the strongest consensus exists regarding preventive services.[16] In addition, the small number of publicly insured adult enrollees age 18 to 64 years precluded our analyzing them separately.

Managed Care Status

Consistent with prior studies,[17] the MEPS classified an individual as belonging to a private MCO if (1) he or she noted that the insurance plan was purchased through an HMO; or (2) if the plan required that the policyholder receive care from specified HMO physicians or other physicians only upon referral by that HMO physician; or (3) if the plan required that the policyholder designate a primary care doctor, group of doctors, or a certain clinic where the policyholder must go for all routine, nonemergent care. An individual was classified as being enrolled in a FFS plan if he or she reported being privately insured and did not meet the above criteria for enrollment in a MCO plan. This included individuals in traditional FFS plans as well as some preferred provider organization plans that reimbursed providers on a FFS basis.[18]

Preventive Services

The 7 preventive services reported in round 3 of the 1996 MEPS were physical examination, blood pressure measurement, cholesterol testing, Papanicolau (Pap) testing, clinical breast examination, mammography, and prostate examination. Round 3 of the MEPS HC provides this information in the following 5 categories: obtained service within the past year, within the past 2 years, within the last 5 years, more than 5 years, or never received that preventive service. On the basis of guidelines existing in 1996 and issued by several national groups on the frequency and appropriate screening age range of these services,[16] we considered a person to have appropriately received each preventive service if he or she reported the following:

a) A physical examination within the past year among adults age 18 to 64 years;
b) A blood pressure measurement within the past year among adults age 18 to 64 years;
c) Cholesterol assessment within the past 5 years among adults age 35 to 64 years;
d) Pap smear examination within the past 2 years among females age 18 to 64 years;
e) Clinical breast examination within the past 2 years among females age 40 to 64 years;
f) Screening mammography within the past 2 years among females age 40 to 64 years;
g) Clinical prostate examination within the past 2 years among males age 50 to 64 years.

We also examined associations between these outcome variables and possible covariates including age, gender, educational level, self-perceived health status, and household income. Self-perceived health status was classified as (1) "excellent," (2) "very good" or "good," or (3) "fair" or "poor."

Statistical Analyses

To obtain nationally representative estimates, all analyses used the 1996 MEPS HC person-level weights, which reflect population distributions and account for the household probability of selection, ratio-adjustment to national population estimates, and adjustment for nonresponse. To obtain estimates of variability, we used

a Taylor Series estimation approach.[19] Variance estimation strata and primary sampling unit variables were provided with the MEPS HC data.

We evaluated statistically significant differences in the distributions of covariates and preventive services among MCO and FFS enrollees in each racial/ethnic group using χ^2 comparisons. We also used 2×2 χ^2 tests to compare preventive service utilization among African-American or Hispanic enrollees in MCO or FFS versus NHWs in such plans.

Multivariate Analysis

We used logistic regression to compare receipt of preventive services among privately insured African Americans, Hispanics and NHWs enrolled in MCO versus FFS after adjusting for age, gender, education, household income, and health status. For each preventive service examined, 3 models were run, one for each racial/ethnic group using MCO status as the independent variable. We present the adjusted odds ratios (ORs) and 95% confidence intervals (95% CIs) for MCO enrollees in each racial/ethnic group having that preventive service, using FFS as the referent group. For rare events, the odds ratio is a useful approximation of relative risk. For more frequent events, such as preventive service utilization, odds ratios may be misleading. For this reason, we also used the parameter estimates from the multivariate models to obtain the adjusted percentage of persons in MCO and FFS plans who would have reported receiving each preventive service if the distribution of covariates in FFS and MCO had been similar. Because separate models were used to obtain these parameter estimates for African Americans, Hispanics and NHWs, such adjusted percentages cannot be used to compare rates of preventive service utilization across racial/ethnic groups.

We used the Hosmer-Lemeshow goodness-of-fit test on weighted estimates to examine the overall adequacy of each of our models. We found that specifying age as a continuous variable resulted in better-fitting models than age as a categorical variable as determined by log likelihood ratios. Transformations of age including quadratic terms did not improve fit. To examine for possible interactions within each racial/ethnic group, we examined use of preventive services among MCO and FFS enrollees stratified by the covariates of age, gender, education, and functional status. When a possible interaction was suggested, it was formally tested by adding an interaction term to the model and determining if this term was statistically significant. We also used log-likelihood statistics to determine if inclusion of such interaction terms significantly improved the model. All of our statistical tests were 2-tailed, and the significance criterion was set at $P < .05$. All analyses were performed using SAS software (Version 6.2; SAS Institute, Cary, NC) and SAS-callable SUDAAN (SUDAAN 7.5; Research Triangle Institute, Research Triangle Park, NC).

RESULTS

In 1996, 78% of non-Hispanic white adults age 18 to 64 years in the MEPS sample had private insurance coverage versus 56% of African Americans and 46% of Hispanics ($P < .01$). This sample was representative of the 91.6 million NHW, 10.9 million black, and 8.1 million Hispanic adults age 18 to 64 years with private insurance coverage. In this group, African Americans and Hispanics were significantly more likely to report being enrolled in a MCO plan at 63% and 67%, respectively, as compared to 52% of NHWs ($P < .01$).

As shown in Table 1, both Hispanics and African Americans in lower income and education groups were less likely to be enrolled in MCO plans ($P < .01$ for both). In addition, African-American enrollees in MCOs were more likely to report fair/poor health than those in FFS ($P < .05$).

Comparisons between Managed Care and FFS Plans in Each Racial/Ethnic Group

As shown in Table 2, within each racial/ethnic group, persons belonging to MCOs tended to report more preventive services than those in FFS for nearly all measures examined. Those differences between MCO and FFS enrollees remained after multivariate logistic adjustment for the covariates of household income, level of education, gender, age, and self-perceived health status (Table 3). Hispanics in MCOs were more likely than their FFS counterparts to report having preventive services, with adjusted differences ranging from 5 to 19 percentage points. Statistically significant differences for Hispanic MCO versus FFS enrollees were noted for physical examination (OR 1.41; 95% CI, 1.02 to 1.92), blood pressure measurement (OR 1.69; 95% CI, 1.20 to 2.38), Pap smears (OR 1.82; 95% CI, 1.08 to 3.13), and breast examinations (OR 2.78; 95% CI, 1.15 to 6.67). African Americans in MCOs also tended to have higher rates of preventive services than those in FFS, but the differences were smaller and did not reach statistical significance for any of the preventive services examined. Among NHWs, differences between MCO and FFS enrollees were of a similar magnitude as for African Americans. However, due to larger sample sizes, comparisons were statistically significant for physical examination, (OR 1.28; 95% CI, 1.14 to 1.45), blood pressure measurement (OR 1.43; 95% CI, 1.22 to 1.64), cholesterol assessment (OR 1.33; 95% CI, 1.15 to 1.54), and among women, Pap smears (OR 1.30; 95% CI, 1.04 to 1.64). We caution, however, that in a few of the multivariate models for African Americans, and in several of the models for NHWs, the covariates were not strongly associated with preventive service utilization and the Hosmer-Lemeshow test suggested poor model fit ($P > .05$). Addition of covariates to those models did not significantly alter the univariate estimates presented in Table 2.

The only notable interactions were among Hispanics, where for many of the preventive services, the magnitude of the difference between MCO and FFS enrollees was greatest

Table 1. Characteristics of Privately Insured Hispanic, African-American and Non-Hispanic White Fee-for-service and Managed Care Enrollees

	Hispanics		African Americans		Non-Hispanic Whites	
	Managed Care (*N* = 738)	Fee-for-service (*N* = 382)	Managed Care (*N* = 577)	Fee-for-service (*N* = 352)	Managed Care (*N* = 3,232)	Fee-for-service (*N* = 3,151)
Age, %						
18–29, y	28	30	20	21	20	20
30–44, y	43	41	48	38	43	38
45–64, y	29	29	31	41	37	42
Female, %	54	48	56	54	53	50
Household income ≤199% of Federal poverty level, %	24	37	23	31	13	16
Education, %						
Less than high school	26	31	8	16	7	9
High school/equivalency	37	32	38	38	34	36
Some college	38	37	54	46	59	55
Self-perceived health status, %						
Fair or poor	32	30	30	21	33	35
Good or very good	57	59	61	67	60	58
Excellent	11	12	9	11	7	7

Note: Percentages may not sum to 100 due to rounding.

among those of lowest income and educational level. However, the interaction term for this relationship was not statistically significant in the models for any of the preventive services.

Racial/Ethnic Disparities within MCO or FFS Plans

To examine potential racial/ethnic disparities in receipt of preventive services, we compared preventive service utilization among African Americans and Hispanics in either FFS or MCOs to NHWs in each of these plans. (Table 2) Among African Americans, enrollees in both MCOs and FFS plans appeared to do as well as NHWs in receiving the assessed preventive services. In fact, African Americans in both MCO and FFS plans were several percentage points more likely than NHWs to report having a cholesterol assessment and Pap smear examination ($P < .05$).

In contrast, Hispanics in both MCOs and FFS plans reported slightly lower rates of several preventive services than did NHWs, with differences being statistically significant for blood pressure and cholesterol determination ($P < .05$). Furthermore, Hispanic women in FFS were somewhat less likely than NHWs in FFS to report having Pap smears (75% vs 80%, respectively), mammograms (66% vs 74%) and breast examinations (73% vs 84%). However, due to smaller sample sizes, those differences were not statistically significant.

DISCUSSION

Our findings that persons in MCOs have slightly improved rates of preventive services as compared to those in FFS have been attributed to the emphasis that MCOs place on preventive services.[17] Our findings with respect to racial/ethnic disparities are consistent with recent data showing that gaps in preventive service utilization between African Americans and NHWs have narrowed substantially, but that Hispanics remain less likely to receive such

Table 2. Self-reported Preventive Services Among Privately Insured Hispanic, African-American and non-Hispanic White Managed Care and Fee-for-service Enrollees

	Hispanics		African Americans		Non-Hispanic Whites	
	Managed Care (*N* = 738)	Fee-for-service (*N* = 382)	Managed Care (*N* = 577)	Fee-for-service (*N* = 352)	Managed Care (*N* = 3,232)	Fee-for-service (*N* = 3,151)
Physical examination, %	50*	41	61†	56†	47*	41
Blood pressure measurement, %	77*,†	66†	81	77	83*	77
Cholesterol assessment, %	66†	58†	78†	75†	72*	67
Pap smear examination, %	85*	75	89†	86†	84*	80
Breast examination, %	85	73	90	89	86	84
Screening mammography, %	74	66	75	75	76	74
Prostate examination, %	61	46	78	69	72	70

* $P < .05$ *for comparison between managed care enrollees and fee-for-service enrollees within each racial/ethnic group.*

† $P < .05$ *for comparison between Hispanics or African Americans and Non-Hispanic whites in either fee-for-service or managed care plans.*

Table 3. Multivariate Analyses of Self-reported Receipt of Preventive Services in Each Racial/ethnic Group Adjusted for Gender, Age, Household Income, Education, and Self-perceived health status*

	Hispanics			African Americans			Non-Hispanic Whites		
	MCO, %	FFS, %	Odds Ratio (95% CI)	MCO, %	FFS, %	Odds Ratio (95% CI)	MCO, %	FFS, %	Odds Ratio (95% CI)
Physical examination	54	46	1.41 (1.02 to 1.92)	61	56	1.20 (0.84 to 1.72)	46	40†	1.28 (1.14 to 1.45)
Blood pressure measurement	81	72	1.69 (1.20 to 2.38)	80	77	1.18 (0.78 to 1.79)	83	77†	1.43 (1.22 to 1.64)
Cholesterol assessment	77	72	1.41 (0.97 to 2.04)	87	84	1.14 (0.75 to 1.72)	85	81†	1.33 (1.15 to 1.54)
Pap smear examination	85	75	1.82 (1.08 to 3.13)	88	85	1.23 (0.63 to 2.44)	85	81	1.30 (1.04 to 1.64)
Breast examination	84	67	2.78 (1.15 to 6.67)	91	90	1.04 (0.47 to 2.33)	87	86	1.10 (0.83 to 1.47)
Screening mammography	72	55	2.22 (0.97 to 5.00)	75	72†	1.08 (0.57 to 2.04)	78	76	1.14 (0.89 to 1.45)
Prostate examination	59	40	2.17 (0.76 to 6.25)	81	75†	1.72 (0.52 to 5.56)	74	71	1.16 (0.81 to 1.67)

** We present the adjusted odds ratio (OR) and 95% confidence intervals (CI) for MCO enrollees in each racial/ethnic group having that preventive service using FFS as the referent group. We also present the percentage of persons in MCOs and FFS plans who would have received each preventive service if the distribution of covariates in FFS and MCO had been similar in that racial/ethnic group. As a separate model was computed for Hispanics, African Americans and non-Hispanic whites, such percentages cannot be used to compare rates of preventive service utilization across racial/ethnic groups.*

† Preventive services for which the Hosmer-Lemeshow goodness-of-fit test in that racial/ethnic group was $P > .05$ (poor model fit).

MCO, managed care organization; FFS, fee-for-service.

services.[20] These disparities among privately insured Hispanics, but not African Americans, may indicate an important role for non-financial barriers to access such as language and cultural differences.[21,22]

Although Hispanics still lagged in some measures when compared to NHWs, Hispanic MCO enrollees tended to fare better than those in FFS. Studies among insured populations have identified factors that improve the delivery of preventive health services, including clinical information systems,[23] improvements in organizational structure,[24] and financial incentives.[25] Among low-income women, personal letters and newsletter articles doubled rates of preventive services in one HMO.[26] Other MCOs have undertaken initiatives to improve the care of patients from different ethnic backgrounds through culturally appropriate community outreach activities.[27] Future studies will need to examine which MCO interventions have been successful in improving preventive service utilization among Hispanics.

As an example of the clinical significance of our findings, we note that Hispanic females in MCOs were about 10 percentage points more likely to have a Pap smear examination than those in FFS. Using a natural history model of cervical cancer,[28] we estimate that among the 4.2 million Hispanic females age 18 to 64 years with private insurance, over a lifetime such differences would result in 9,072 prevented cases and 4,494 prevented deaths from cervical cancer.

Our findings differ from those of studies that have examined different dimensions of quality among privately insured racial/ethnic minorities, particularly patient satisfaction. One study in 3 southern states found that African-American MCO enrollees were twice as likely as their FFS counterparts to report problems obtaining required medical care.[29] Hispanics in MCOs also rated their physician's concern about them as "fair" or "poor" at twice the rate as those in FFS plans.[29] Another study using MEPS data reported that racial/ethnic minorities were more likely than NHWs to report barriers to care.[30] In addition, Hispanic MCO enrollees were more likely than those in FFS plans to lack confidence in their usual source of care provider's ability to help with medical problems.[30] Similar findings of lower satisfaction by minorities in MCOs have been reported with Medicare HMOs.[31]

Because less than half of racial/ethnic nonelderly adult minorities are covered by private sector insurance, our results cannot be generalized to the Hispanic or African-American adults who are uninsured or covered by government insurance. Such populations tend to be poorer, sicker, and have greater comorbid disease than the privately insured population.[32] Studies among poor children suggest that Medicaid MCOs improve receipt of preventive services.[33] Data in older adults suggest that Medicare MCOs may improve preventive services among minority elders but do not eliminate racial disparities.[10]

Our study relied on self-reported receipt of preventive services, and there is the potential for recall bias. Several studies have demonstrated good correlations between some self-reported preventive services and medical record data,[34,35] while other studies suggest that self-reported data overestimate some of these measures.[36–38] Specifically, self-report may be more valid for physical examination and Pap smear examination than for laboratory services.[39] Another limitation of our study is that because the 3 rounds of the 1996 MEPS HC were conducted over a period of 1 year, it is possible that an individual might have changed insurance plans from the time that insurance status was assessed in round 1 to when information on preventive services was elicited in round 3. While the annual rate of disenrollment from MCOs is approximately 20%,[40] most privately insured persons who disenroll join another MCO. Some FFS enrollees may have joined MCOs plans during the reference period, also resulting in some misclassification.

Finally, we analyzed MCOs as one group, yet the quality of outpatient care delivered by different types of MCO plans may vary considerably.[41,42] One study found that nonprofit plans have higher rates of preventive service utilization than investor-owned HMOs.[43] Thus, our 1996 data may not be representative of the investor-owned MCO plans that dominated the market in the late 1990s.[44]

In our analysis of preventive service utilization among racial/ethnic minorities, we found privately insured Hispanic MCO enrollees fared better than those in FFS. MCOs also helped narrow some but not all ethnic disparities. For a variety of reasons, including a public backlash, threats of tighter governmental regulations, and failure to contain costs, many policy experts predict the demise of the traditional gate-keeping MCOs that existed in 1996.[45,46] As new types of health plan arrangements begin to develop, reform efforts should incorporate those aspects of MCOs that led to improvements in preventive service utilization among minority groups. Features of MCOs that led to problems in other areas such as patient dissatisfaction among minorities should be avoided. Existing ethnic disparities among privately insured Hispanics also warrant further attention.

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